

Redundant Controller

Built-in redundancy increases fault tolerance

The SmartPick controller design incorporates a number of redundant components which provide a high level of tolerance to faults.

The main feature of this design is the dual processor architecture in which a primary module (main board) and secondary module (redundancy board) constantly monitor each other's presence as well as the presence of the two principal power sources: mains and battery. An overview of the redundant architecture is shown below in Figure 1:

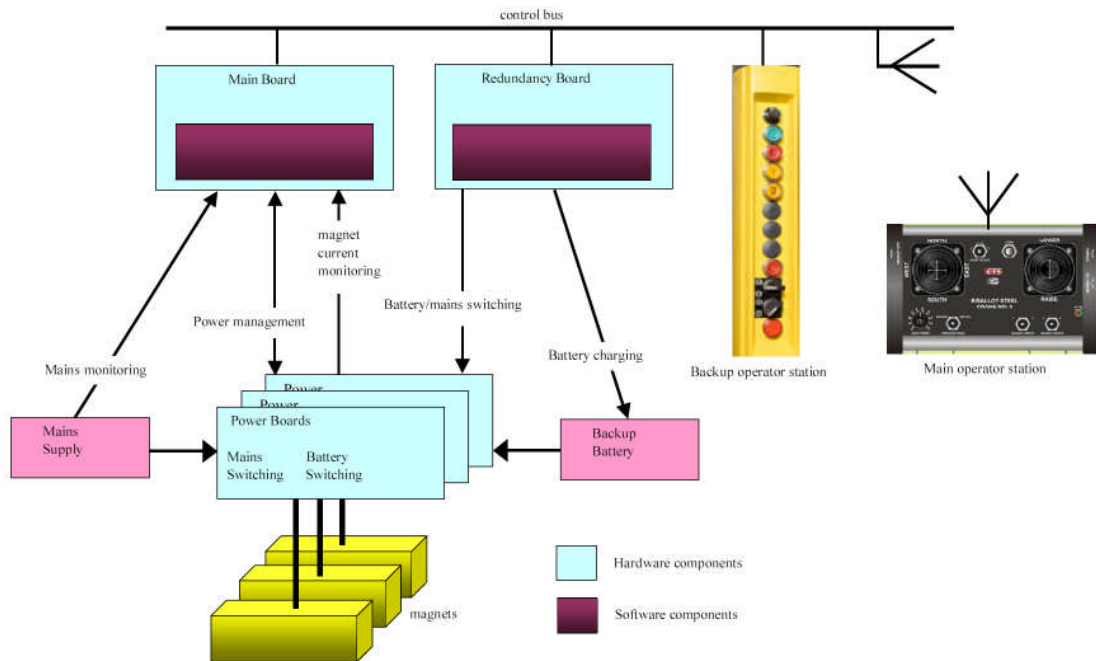


Figure 1: Redundant controller architecture

This redundancy ensures that the magnet system can continue to operate in the event of failure of one of several key components, notably:

- Mains supply: a mains supply failure while the magnets are powered on triggers an immediate switch to backup battery with automatic return to mains operation if mains power is restored.
- Main board: if the main board fails completely while the magnets are powered on the redundancy board automatically switches to backup battery. The redundancy board also provides an emergency power off function for the magnets if requested by the operator.
- Main operator station (radio remote control or crane cabin): if the main operator station fails the magnets may still be controlled from the backup operator station (usually a pendant).